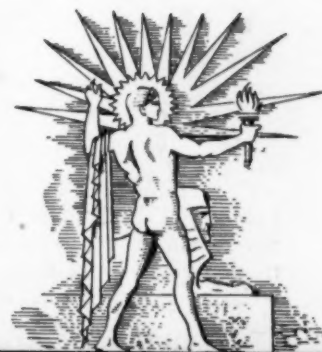
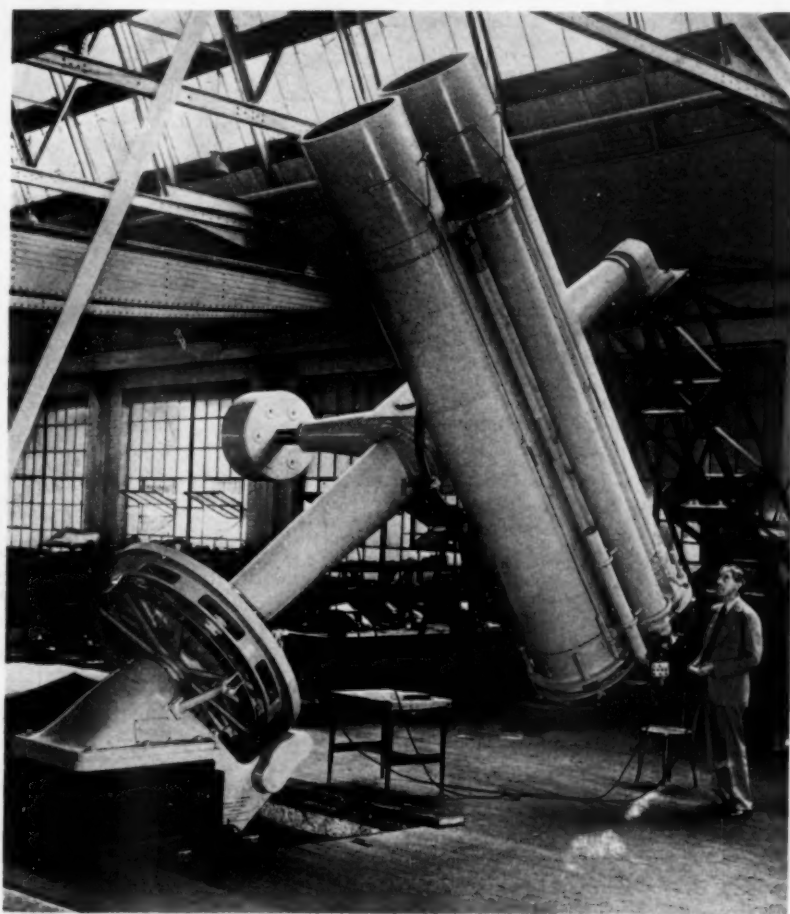


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SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE •



September 2, 1939

Double-Barreled

See page 153

A SCIENCE SERVICE PUBLICATION

Do You Know?

No point in Florida is more than 100 miles from the shore.

It takes a wool sponge five years or longer to grow to market size.

Glass curbs to mark the roadsides for safer night driving are being tried in England.

Young foxes, wolves, and bears are called pups; young beaver, mink, and muskrat are called kits.

Dialects spoken in the Great Smoky Mountains National Park in North Carolina and Tennessee are being studied for historic record.

A nursing bottle that fits into a vacuum bottle to keep the milk warm for traveling and for 2:00 a.m. feedings has been developed.

The United States has 342,000 Indians, representing about 200 tribes and speaking 55 distinct languages in more than 200 dialects.

To insure uniform diameter in fine wire, the wire is drawn through holes in diamond crystals, each successive hole being smaller until the wire is the right size.

One of the major benefits from the building of the Panama Canal has been the demonstration to tropical and semi-tropical countries of ways of controlling malaria, yellow fever, dysentery, and plague.

QUESTIONS DISCUSSED IN THIS ISSUE

Most articles which appear in SCIENCE NEWS LETTER are based on communications to Science Service, or on papers before meetings. Where published sources are used they are referred to in the article.

AERONAUTICS

What recommendations has the Air Safety Board made to prevent accidents? p. 150.

AGRICULTURE

How many U. S. crop plants are native here? p. 152.

ANTHROPOLOGY

How do the Japanese in Hawaii differ from those in Japan? p. 153.

What is unusual about the physical appearance of the Russians? p. 155.

ANTHROPOLOGY-PHYSICS

What dark pigment is present in the skin of the lightest blonds? p. 158.

ASTRONOMY

What planet has taken the place of Mars in special brightness? p. 154.

BOTANY

How much grass root is there to the acre? p. 156.

CHEMISTRY

In what respect is skunk cabbage better than spinach? p. 150.

DENTISTRY

What new use has been found for lacquer like that for automobile bodies? p. 152.

GENETICS

How does a gene, bearer of life, differ from a virus, carrier of disease and death? p. 147.

In what tiny creature have scientists discovered tumors? p. 148.

MEDICINE

What emotional factors are linked with rheumatoid arthritis? p. 149.

What ill effect has sulfapyridine on some patients? p. 157.

What new remedy has been found for trachoma blindness? p. 150.

What new success has been attained by nicotinic acid? p. 153.

Who holds the secret of the new method of petrifying body parts for medical study? p. 149.

ORNITHOLOGY

How can a new type of bird shot save the lives of ducks? p. 152.

PHARMACY

For what chemical test is blood now used? p. 151.

What drug has been found valuable in treating athlete's foot? p. 151.

PHYSIOLOGY

What is harmful about an exploding shell besides the flying bits of metal? p. 148.

PUBLIC HEALTH

How is England preparing for the blood spilling of war? p. 148.

All cultivated cherries are traced to either the sweet or sour branch of the family.

Grasshoppers do not take to the air unless the temperature rises to about 85 degrees.

Agricultural engineers have reported a way to make a tin roof as cool as wood shingles by laying the galvanized iron on solid sheathing and coating it with aluminum paint.

A white coyote recently was seen in Rocky Mountain National Park, Colorado.

The giant ocean liners, *Normandie* and *Queen Mary*, are the first ships to be too large to pass through the locks of the Panama Canal.

In the Northwest small freezing units have been installed on many farms for the quick freezing of foods, and a few are being tried in New York State.

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GENETICS

Heredity-Bearing Genes and Death-Dealing Viruses Alike

X-Ray Studies Reported to International Congress Suggest Possible Essential Similarity; May Be Free

GENES, the bearers of life, and viruses, that bring disease and death, may be very much alike.

This revolutionary suggestion was laid before the meeting of the Seventh International Congress of Genetics in Edinburgh, Scotland, by Prof. John W. Gowen of Iowa State College.

Prof. Gowen also told of his use of X-rays as measuring tools, to give an estimate of the size of both these types of vitally important particles, which are too small to be seen with even the most powerful of microscopes. He found the virus particles to be super-sized molecules, with a molecular weight of approximately 16 million. This is in fairly close agreement with measurements obtained by other means.

Regarding the possible essential similarity between genes and virus particles, the American scientist said:

"Possibly the only difference between these small viruses and the gene is that the latter is attributed a place in the cell chromatin whereas the former is free to move, making its isolation in relatively pure form possible. But even this difference is likely to break down. With better techniques of recognizing gene effects, these substances may very possibly be found within the cell cytoplasm or even in the circulation of the animal or plant."

The idea of genes wandering at large in plants and animals, instead of always roosting securely on or in the chromosomes, is a new slant in genetics. It would put both genes and virus particles in the position of being complex chemical entities that go about giving orders to the rest of the protoplasm. The difference would be that genes are "natives," with a right to do this, while virus particles would be outsiders, muscling in and forcing the protoplasm into abnormal behavior.

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Benefits to Well-to-do

FAMILY allowances for all who earn up to \$10,000 annually to encourage more children and prevent the world's

new freedom of voluntary parenthood from becoming disastrous is advocated by Dr. R. A. Fisher, Galton professor of eugenics, University College, London, in answering Science Service's inquiry as to how the world's population could be improved most effectively genetically. (See SNL, Aug. 26)

"Parenthood is now voluntary," stated Dr. Fisher, one of the world's leading authorities on human heredity. "If this new freedom is not to be disastrous, it is necessary that in all grades of society parents and non-parents, contributing by their work equivalent services, shall enjoy equivalent benefits. On the economic and industrial side this problem is now solved in countries which apply systems of family allowances.

"In English speaking countries the issue has been obstructed and obscured by giving such allowances only, or principally, to the unemployed, and to those in special need. Contributory systems should be applied to all wages and salaries up to \$10,000, as are contributory systems of superannuation benefit.

"We might then cease to destroy the best qualities of our peoples, as we now do, by selecting native ability from all classes, and effectively sterilizing its possessors by drafting them into occupations where small families, or none, are customary.

"There is no biological reason why the large houses of the prosperous should not support more children than the cramped quarters of the poor, and there is every reason in the name of both inheritance and environment for seeing to it that they shall do so."

Dr. Fisher is one of several world leaders in genetics to whom was put the important inquiry by Science Service.

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Triple-Resistant Wheat

A TRIPLE-RESISTANT variety of wheat, able to defy three of wheat's worst natural enemies, will be ready for distribution to growers in 1943, Prof. Fred N. Briggs of the University of California promised.



SMALLEST METAL TUBE

About the size of an average hair of your head is a World's Fair wonder at the West Virginia Building. Material: Pure nickel. Diameter: 26/10,000th of an inch. Its hole is less than a third that. Use: None except to be seen, although hypodermic needles use only slightly larger tubes. At left is tube, at right hair. Center, the point of a pin.

The wheat breeder is able to make this prediction with confidence that when the time comes he will deliver the goods because of the method used in producing the new variety, Prof. Briggs explained. By crossing a resistant strain with a productive but non-resistant one, and then back-crossing the hybrid offspring with one of the parent stocks, the desired character of the parent can be stabilized or fixed in the new variety.

Back-crossing thrice repeated has already produced a wheat resistant to both bunt and Hessian fly, in the California breeding fields. Seed of this variety will be available to California growers in 1940. The triple-resistant wheat will require five backcrosses.

Back-crossing is also being used for the production of hullless and awnless barleys. A number of other crops are under experiment, Prof. Briggs stated.

Science News Letter, September 2, 1939

Teosinte Not Ancestral

CORN is not descended from the heavy-stalked Mexican grass called teosinte; more likely teosinte is descended from corn.

Evidence pointing strongly in this direction was presented by Prof. P. C. Mangelsdorf of Texas Agricultural Experiment Station.

It has long been contended that corn

was derived, in some long-forgotten age, from teosinte, largely because teosinte grows abundantly in the wild state in Mexico and Central America, where corn, whose wild ancestor has never been found, was the staff of life of the great Indian civilizations.

Prof. Mangelsdorf, suspecting that teosinte, not corn, might be the descendant, tried making hybrids of corn with a related wild grass, *Tripsacum*. He obtained intermediate forms, that suggested teosinte in some of their properties. A critical re-examination of teosinte disclosed the interesting fact that every character of teosinte is found in either corn or *Tripsacum*, or is intermediate between the two.

Not only is this the case, but analysis of the heredity-bearing chromosomes within the cells of his hybrid plants showed that the germ-plasms of corn and *Tripsacum* are capable of the intimate mixtures and interchanges that are required for the origination of stable hybrid forms.

As more probable ancestor to corn, Prof. Mangelsdorf pointed to pod corn, a strange type with each kernel covered in an individual husk, now grown only as a curiosity. He suggested that a wild pod corn may still be growing, somewhere in the lowlands "back of the Andes," in whose valley and plateau lands corn was first extensively used by highly civilized Indian nations.

Science News Letter, September 2, 1939

Tumors in Fruit Fly

IT IS hard to think of an insect no bigger than a gnat being afflicted with tumors. Yet such is the case. Prof. Mary B. Stark of New York Medical College told of such growths which she has studied in the larval stage of *Drosophila*, the gnat-sized fly that is the favorite animal of geneticists.

In certain strains of *Drosophila* these tumors appear generation after generation, in the digestive tract. They are sex-linked, appearing only in males—and they kill half of these. In another strain, the tumors appear in both sexes, but are not lethal.

Science News Letter, September 2, 1939

White Feathers: Thick Shells

DEFINITE hereditary physiological traits go along with visible bodily character in different breeds of fowl, Prof. F. B. Hutt of Cornell University told the meeting. Thus, White Leghorn hens lay thicker-shelled eggs than do heavier breeds like Plymouth Rocks or

Rhode Island Reds, and they adjust more readily to changes in temperature.

Inheritance of abnormalities in fowls, producing the seldom-seen "freak" breeds such as Creeper and Dark Cornish, were reported by Prof. Walter Landauer of Connecticut Agricultural Experiment Station. In these breeds there is a hereditary shortening of the leg and wing bones, producing a kind of Dachshund-in-feathers effect. In the purest-bred (homozygous) specimens this shortening extends to other bones, and the phenomenon may be so pronounced that the chick is unable to hatch at all, but dies within the shell.

Science News Letter, September 2, 1939

Cells Fail to Divide

SOME of the strangest cells ever seen through a microscope were described by Dr. Charles A. Berger, S. J., of Woodstock College.

If twice or four times the normal number of the heredity-bearing chromosomes are found in the cells of an animal or plant, that is considered something worth mentioning at a scientific meeting. But Dr. Berger has found cells in the lining of the digestive tract of mosquito larvae that have 48, 96, and once in a while even 192 times the normal chromosome number.

Ordinarily a doubling in chromosome number within a cell is the preface to division into two cells. But these strange cells in the mosquito "wigglers" just pile up their chromosome counts without dividing. Finally, when the larva is preparing to change into a winged adult, the divisions appear all at once, and the chromosome numbers go back to normal in the new cells.

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PUBLIC HEALTH

England Making Ready For Blood Transfusions in War

ALL EUROPE makes ready for possible war with a grimness that must stifle much constructive and creative activity. Air raid protections are being constructed in gardens, public parks, and in basements. Medicine too is preparing for the immense overload on its services that will come if other countries are bombed as Spain was in its recent war.

Most extensive of the medical preparations in England is the emergency blood transfusion scheme. If bombs rain on England, much blood will be spilt. Spanish experience showed that at least a

tenth of the casualties could be saved by blood transfusions. Now when it is possible to do so, men and women by the thousands are having their blood group determined so that their blood can be used to save lives when and if the need arises.

In making a transfusion not just any blood will do. It must be of the proper group. Blood that does not match may actually kill the patient. In addition, the prospective donor of the blood must not suffer from any blood-carried disease. Typing and testing a person's blood is a skilled operation that takes time. It is better to have that part of the job done before the need arises.

Healthy men and women between 21 and 65 are volunteering at 70 centers throughout England as blood donors. Already 10,000 have been tested in the London area alone. For Greater London and surrounding area, 250,000 are needed. Accepted donors are given distinctive cards telling to which of the four groups their blood belongs. Already it is planned to give blood donors extra rations to maintain their blood quality if food becomes scarce.

Because blood can be kept in cold storage until needed, blood storage depots, each equipped with at least 10,000 bottles and apparatus for its collection and distribution, have been arranged.

War, if it comes, will be bloody in a saving sense as well.

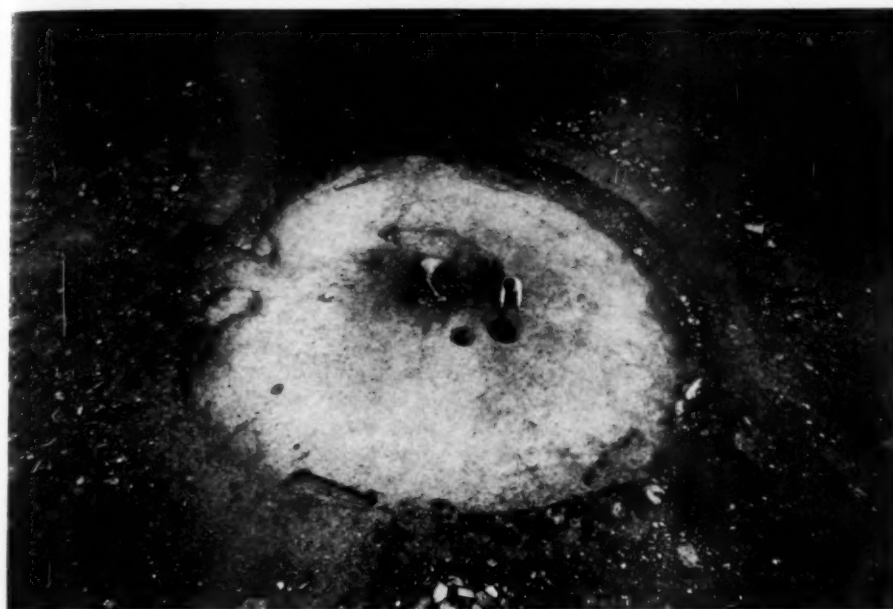
Science News Letter, September 2, 1939

PHYSIOLOGY

Air Defense Experts Are Worried About "Blast"

ADVANCE reverberations of war from London: Pieces of metal sprayed about by exploding bombs are not the only hazard. "Blast," the very rapid rise in air pressure followed by a slightly slower fall caused by a near-by explosion, has defense experts worried. It is a physiological problem not licked by air raid shelters. Earth and iron protection may stop bomb splinters, but they don't stop the air blasts. Science needs to know more about "blast," but it does know its lethal effect is dependent upon the rapid fluctuation of pressure. Grim figures—tests indicate that there would be 17 casualties per ton of bombs dumped on London if all were protected by Anderson air raid shelters, and they won't be. Estimates the President of the Air Raid Protection Institute: "Germany alone could dispatch 3,000 tons of bombs per day to Britain."

Science News Letter, September 2, 1939



PIT HOUSE SEES DAYLIGHT

This big assembly room, being excavated by Field Museum archaeologists, was a dark underground structure in an Indian village of the Mogollon Mountains in New Mexico. A short tunnel served as entrance. A fire pit and three storage pits have been found.

ARCHAEOLOGY

Invisible Indian Villages
Detected by Expedition

INVISIBLE Indian villages, marked only by tiniest surface clues, have been detected in mountains of western New Mexico by Field Museum of Natural History's expedition in search of the little-known Mogollon Indian culture of the old Southwest.

The dead and buried villages were found just off the trail followed by the Spanish gold hunting expedition of Coronado, which marched that way in its futile search for the fabulous wealth of the "Seven Cities of Cibola," says the first report of the find, received from the expedition leader, Dr. Paul S. Martin.

Thumb-nail-size scraps of brown Indian pottery, scarcely different from pebbles in appearance, drew the archaeologists' attention to the significance of the site. Excavating, they have uncovered walls and floor of a subterranean pit-house used by Indians for celebrations. The underground building is 33 feet in diameter, and is pronounced one of the largest structures of the kind ever excavated in the region.

Like gold-hunting Coronado, modern local pottery hunters have never suspected the presence of the hidden prehistoric settlements. The place had already been abandoned more than 700 years when Coronado passed, by, in the 1540's, according to Dr. Martin's estimate of the site's antiquity.

The expedition, he reports, has already found important clues concerning the age and development of the Mogollon culture of the Southwest.

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MEDICINE

Chronic Joint Trouble Linked
To Worry, Poverty And Grief

Nearly All of Fifty Cases Studied Were Insecure;
Relative Importance of Emotional Factors Needs Study

ENVIRONMENTAL stress, especially poverty, grief and family worry, seem to bear more than a chance relationship to the onset and flare-up of the chronic joint disease, rheumatoid arthritis, Drs. Stanley Cobb, Walter Bauer and Isabel Whiting of Boston, report. (*Journal, American Medical Association*, Aug. 19)

Ten men and 21 women in the group of fifty studied gave histories of financial stress involving "tough times," "no work," or "on relief." These accounts corresponded in point of time with the onset or flare-up of the arthritis.

The same underlying factors of uncertainty of work, with the consequent worry about a livelihood for their families, appear in the studies of 12 other patients. In these individuals, however, there is not so much evidence of time relationship between the event of the social stress and the increase in the severity of the arthritis as in the 31 cases.

The remaining seven cases in the group studied, which included some of the youngest patients, gave no indication of relationship between social insecurity and arthritic history.

"Rheumatoid arthritis is a chronic disease of unknown origin," the physicians declare. "It respects neither age, sex, race nor social position, although it does affect women more frequently than men, white persons more often than Negroes and the poor more commonly than the rich. In addition to the joint involvement, which is usually symmetrical and more likely to affect small joints first, the patients complain of constitutional, vasomotor or urologic symptoms."

The physicians believe that the relative importance of emotional factors in the cause of the disease can be established only by a much more detailed psychiatric study of a large group of such patients.

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MEDICINE

Body Parts Petrified For
Study by Physicians

PETRIFYING news from Italy via the American Medical Association: Prof. Francesco Spirito, head of the obstetric and gynecologic clinic of Siena University, preserves human viscera so effectively that they look like pieces of colored marble.

The method is still secret, deposited with the Accademia dei Lincei, but the world will be told eventually.

Diseased organs can be petrified to facilitate study and then made soft again for microscopic examination. Other Italian scientists have had similar methods, but they never disclosed how they did the trick.

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AERONAUTICS

Longer But Safer Take-Offs May Follow Air Safety Report

**Urge Use of Less Power at Time of Greatest Strain;
Full-Feathering Propellers and New Belts Recommended**

COMMERCIAL airliners will require more time and room to get off the ground in the future, but will do so with greater safety, if recommendations of the Air Safety Board are adopted by the Civil Aeronautics Authority and the aviation industry.

Airlines should take less power out of their engines at take-off, the time of greatest motor strain, the Board declared in a report on a Braniff Airways accident which killed eight last March 27. This will mean longer take-offs. Three other mishaps in the last year are also studied in the report.

Engine failure, the most important remaining cause of air transport trouble can in these cases be blamed on operating engines at higher powers than is safe, the investigation indicated.

Universal adoption of full-feathering propellers and of a standard handier type of seat belt than is found on older plane types is also urged. Full-feathering propellers can be turned edgewise into the airstream and stopped from "windmilling" after engine failure. Vibration due to a "windmilling" propeller was at least partially to blame for Braniff Capt. Claude H. Seaton's inability to make a safe emergency landing after a cylinder in his left engine broke.

Two of the survivors reported they had trouble unfastening the seat belts that prevented them from being thrown around at the moment of the crash. A third passenger, who died, is known to have been conscious after the crack-up. Seat belts on newer planes are much simpler to open than the kind on the wrecked ship.

Two of the three Board members, Thomas O. Hardin and C. B. Allen, recommended that the C. A. A. raise mail pay where necessary to enable airlines to purchase the full-feathering propellers, which have been on the market for about a year and a half. Virtually all the 21-passenger DC-3's, the most familiar airliners, are already so equipped, but almost none of the other types are.

Early adoption of the Board's recommendations is seen from the fact that its last large group of suggestions, made in a report on a forced landing at sea last Dec. 19 which killed five people, has already been adopted by the airlines without the suggestions being made a part of the Civil Air Regulations by the C. A. A.

Only a few airports are so small that airliners will either have to continue operating present take-off powers or abandon them as stops.

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It gives better results, he added, in the acute than the chronic cases.

Trachoma is a very "catching" eye disease that afflicts between 2,000 and 3,000 new victims in the United States each year. About 10 out of every 17 who get trachoma go blind. Quarantine regulations forbid the entry into the United States of any person suffering with trachoma, but cured cases are allowed to enter.

Out of 167 Indian children treated at the Chemawa, Ore., school, the disease was "arrested" in 105 children, Dr. Townsend reported. Another 160 children have been treated at the school at Fort Defiance, Ariz., and have showed "marked improvement." Doctors will not be sure that these children have been "cured" until some months have elapsed without any recurrences of the disease. But 23 patients treated 18 months ago have had no relapses, so the outlook seems encouraging.

The patients feel better right away after the treatment is started, and the pain and soreness in their eyes begins to abate on about the third day. The sulfanilamide is given three times a day, by mouth, every day for five days. Then after two days of "rest" the treatment is resumed for another five days. At the end of this time the eyes are much better and the condition "arrested."

After another month, during which there is no improvement, the eyes begin to improve very rapidly, suggesting a cumulative effect of the drug.

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CHEMISTRY

"Spring Greens" from Weeds Rich in Vitamin C

PIONEER great-grandmother's "spring greens," made from all sorts of wayside weeds, were better than spinach when it came to providing vitamin C, it appears from a study reported (*Science*, Aug. 18) by Prof. R. C. Burrell and Miss Helena A. Miller, of Ohio State University.

Prof. Burrell and Miss Miller analyzed 15 kinds of weeds that have been used in cooked greens and salads, and found that most of them are superior to fresh spinach. Milkweed topped the list by far, with 6.556 milligrams of ascorbic acid per gram of fresh weight. Spinach averaged only 0.812 milligrams per gram, in comparison.

Other high scorers included poke-weed, dandelion, watercress, sorrel and (of all things!) skunk cabbage.

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MEDICINE

Sulfanilamide Aiding War Against Trachoma Blindness

A GROUP of 128 Indian children with healthy, bright, seeing eyes are living evidence that sulfanilamide, medicine's new and potent remedy for deadly germ diseases, is winning the war against blindness from trachoma.

Dr. James G. Gayley, director of health for the U. S. Indian Service, has just returned to Washington with glowing accounts of the successes being won in this war which was started last fall. Alto-

gether, 850 children have been treated with sulfanilamide, besides many adult patients. The drive was started among children because they can be reached through the schools and watched during treatment.

Sulfanilamide, Dr. Gayley believes, is the best thing doctors have had so far for fighting trachoma among the Indians. There is no question but that it brings about a marked improvement.

PHARMACY

Detect Carbon Monoxide In Very Low Concentration

Dilute Mixture of Blood and Pyrotannic Acid Used As Reagent; Pectin Used as Ulcer Treatment

A METHOD for detecting the presence of carbon monoxide in very minute quantities, as an impurity in oxygen intended for human inhalation, was described before the meeting of the American Pharmaceutical Association in Atlanta, by Drs. Frederick K. Bell and John C. Krantz, Jr., of the University of Maryland School of Medicine.

Oxygen is supplied compressed in cylinders for use by pneumonia patients and other critically sick persons, aviators at high altitudes, firemen, mine rescue workers, etc. The presence of even small quantities of poisonous carbon monoxide would of course be extremely dangerous, particularly in hospital use.

The test is made with a reagent consisting of a dilute mixture of blood and pyrotannic acid. This is gray-brown in the presence of uncontaminated oxygen, but turns pinkish when it comes into contact with carbon monoxide in mixtures even as dilute as five parts per million.

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Old-Fashioned Remedy Good

EXPERIMENTS with an old-fashioned remedy which has long been discarded as of no particular value showed it to be capable of relaxing cramps in certain of the body organs, it was brought out in a report by Dean A. Richard Bliss, of Howard College School of Pharmacy, Birmingham, Ala.

The drug is *Potentilla anserina*. It grows as a common weed everywhere, but Dr. Bliss had to send to Germany to get it in prepared drug form. Experiments on animals brought out its almost-forgotten value.

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Pectin Used for Ulcers

PECTIN, the stuff that makes jelly "jell," is the base of a new type of medicated paste that is having great success in the healing of bed sores and stubborn ulcers, Dr. Bernard Fantus and H. A. Dyniewicz of the University of Illinois Medical College told the meeting.

Advantages claimed for the new paste are that it gives the healing tissue a more nearly natural medium in which to grow, that it needs to be changed less often than the dressings now used, and that its cost is much lower.

To the base, which may be either pectin or gum tragacanth, Dr. Fantus and Mr. Dyniewicz add Ringer's solution, which is a synthetic approximation of the inorganic parts of the blood fluid. The paste is applied thickly, covered with a piece of waterproof transparent cellulose sheeting, and the dressing fastened down with adhesive tape.

Different medicaments may be added for specific types of ulcers: sulfanilamide for streptococci, ethyl aminobenzoate for painful ulcers, urea when necrotic tissue is present, etc.

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Remedy for Athlete's Foot

VALUE of sodium hypochlorite solutions for treating athlete's foot was emphasized at the meeting of the American Pharmaceutical Association, by Drs. J. B. Vaughan and H. George DeKay, who reported the results of experiments carried on at Purdue University.

Solutions of the chemical as weak as one-tenth of one per cent in available chlorine were found capable of inhibiting the growth of the fungus that causes athlete's foot, when permitted only 20 seconds contact.

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BOTANY

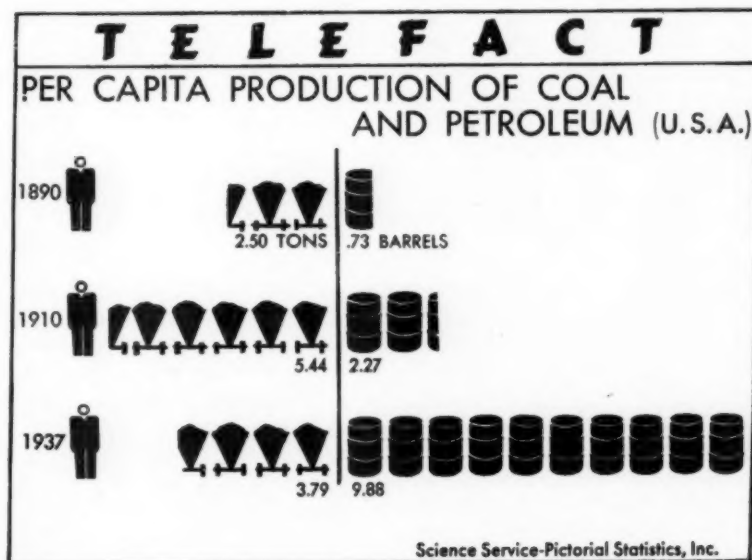
Growth Hormone Makes Pollen Germinate Quickly

POLLEN grains were made to germinate more quickly and surely, and to grow their fertilizing tubes longer and more rapidly by treatment with a growth hormone, in experiments conducted by Dr. Paul F. Smith of the University of Oklahoma. Results may be of considerable practical importance in plant breeding, greenhouse horticulture and other plant sciences and industries where pollen is collected and applied by hand. (*Science*, Aug. 18)

To fertilize a flower and start the development of seed, pollen grains must germinate and produce a long tube, that grows down through the tissues of the flower's pistil, carrying the fertilizing nucleus. Some pollen grains are slow about this.

Treatment with indole-3-acetic acid, standard growth-promoting substance, cut germinating times in half, greatly increased percentage of germination, and in some cases doubled the length of the pollen tubes, of the five species treated. In the most extreme case, that of Austrian pine, the untreated pollen did not germinate at all, while treated pollen showed 51% germination in six hours.

Science News Letter, September 2, 1939



MEDICINE

Hormone Planted Under Skin Has Lasting Effects

CRYSTALS of ovarian hormone, surgically implanted under the skin in women suffering from abnormal physiological states, have prolonged through periods of from 9 to 14 weeks the benefits that last only a few days when the same remedy has been given by the more usual method of intramuscular injection in oil.

Technical description of the new treatment and its favorable results is offered (*Science*, Aug. 18) by Drs. Udall J. Salmon, Robert I. Walter and Samuel H. Geist of Mt. Sinai Hospital, New York.

The physicians announce that further studies are being carried on in a larger series of cases, to determine the duration of the effect in relationship to different amounts of hormone implanted in order to ascertain the optimal amount of hormone for various clinical conditions.

Science News Letter, September 2, 1939

ORNITHOLOGY

New Bird Shot Proposed To Stop Duck Poisoning

WHILE most wild ducks die by hunters' shooting, game conservationists have to reckon with those which die by lead poisoning from shot which never hit them. Spent shot, falling to the muddy floor of favored duck ponds may be eaten by the birds searching for food. Going into the fowl's gizzard they remain to bring on lead poisoning.

An ingenious new method of solving this problem has been proposed in a patent (No. 2,167,828) recently granted to Profs. Ralph L. Dowdell and Robert G. Green of the University of Minnesota.

The proposed bird shot, not yet commercially available, would consist of an alloy of lead and a small amount of some other metal like magnesium, barium, zinc, calcium or sodium. All these metals disintegrate faster than lead when they come in contact with moisture, as in a pond or in the fluids of duck's gizzard.

X-ray pictures show that the disintegration of the shot occurs quickly inside the bird and it is eliminated long before it has had a chance to create slow lead poisoning.

To avoid having the same thing happen in wild birds that are put in cold storage and still have shot in their flesh, the scientists suggest that a thin coating of some other metal—like copper or cadmium could be applied.

This outer layer would be quickly ground off in the gizzard. Even a thin coating of lanolin would serve the same end. As soon as moisture attacked the alloy shot it would begin its quick disintegration action.

Major potential trouble in introducing such a new bird shot would be mostly economic for the alloy material, plus its needed outer coating, would be more costly to make than the simple lead shot now used. Also the production of the proposed shot would have to fit into standard methods now in use which consist of dropping molten lead from a high shot tower. Drops of lead contract into the spheres used in bird shot. Alloys of lead have tendencies to form "tails" on the drops prepared in this way which give them less accurate flight.

Science News Letter, September 2, 1939

DENTISTRY

Lacquering Teeth May Prove Decay Preventive

COATING teeth with a lacquer not unlike that now used on automobiles, furniture and finger nails may be the method of tomorrow for preventing tooth decay. Investigations suggesting this possibility have just been reported to the American Dental Association by Dr. J. T. Gore, Philadelphia dentist.

The lacquer immunizes the tooth enamel against the decalcifying action of acid in the stagnant saliva, which, Dr. Gore believes, is the cause of tooth decay or caries. If his idea proves correct, the dentist, as soon as decalcification appears, would coat the teeth to prevent further decalcification in the affected areas.

Tests with a solution of nitrocellulose and amyl acetate have already been made "in the mouths of a few selected patients" and on extracted teeth.

The extracted teeth after applying the solution and removing all surface coating with powdered pumice, were allowed to stand about 16 hours in a 10% lactic acid solution. The sound enamel on these teeth was dissolved by the acid, but enamel which had been decalcified before the teeth were pulled had been penetrated by the nitrocellulose-amyl acetate solution and stood in relief unaffected by the lactic acid.

The investigations, Dr. Gore reports, are still in a preliminary stage and will be continued. Extensive tests on teeth that have not yet been pulled are planned next.

Science News Letter, September 2, 1939

IN SCIENCE

AGRICULTURE

Only 10 U. S. Crop Plants Are Native in This Land

MOST of the plants of field, orchard and garden, like the white men who raise and eat them, are of foreign ancestry. Immigrants all, or nearly all. Principal field, fruit, nut and truck crops number 78 (U. S. Bureau of Agricultural Economics, 1937) and are valued at \$4,000,000,000. Of these, only 10 are native to the U. S. A. Practically all had their beginnings in this country in small quantities of seed or propagating material obtained by Uncle Sam's plant explorers who have been at it for a hundred years—a centenary worth celebrating.

Science News Letter, September 2, 1939

MEDICINE

Muscle Waves Used in Fighting St. Vitus' Dance

MUSCLE wave records, akin to the now familiar brain wave records and the electrocardiograms of the heart, are science's latest weapon forged for the fight against St. Vitus' dance and similar ailments of which abnormal movements are the chief symptom.

The new weapon is being used by Drs. Paul F. A. Hoefler and Tracy J. Putnam, of Boston City Hospital and Harvard Medical School, in an effort to ferret out more information about the ailments of abnormal movement, such as follow birth injury to the brain and encephalitis.

Patterns of the waves traced by electric potentials from normal muscles, both resting, moving gently and moving forcibly, were compared with patterns under similar conditions from muscles of patients with chorea (St. Vitus' dance), athetosis and the palsy that sometimes follows encephalitis. Significant differences were found which give clues to the particular nerve-muscle mechanism that is deranged in the various ailments, much as a testing apparatus indicates the source of difficulties in a radio set. Effective forms of treatment are available for some of the disorders thus recognized, and others may be found as the underlying difficulty becomes clearer.

Science News Letter, September 2, 1939

CE FIELDS

ASTRONOMY

Twin Telescopic Camera At Lick Observatory

See Front Cover

NOT all the important telescopes are extraordinarily big ones. Interesting and promising great usefulness is a telescopic twin, a double astrographic camera, about to go into service for Lick Observatory, Calif. The photograph on the front cover shows Dr. William H. Wright, Observatory director inspecting the new instrument.

First to be made in America, it takes two 17x17-inch photographs at the same time, which means that one of its photographic eyes can see blue stars brightly and the other can see red stars brightly. Or straight duplicate negatives can be made—handy if astronomer drops one.

It will be used for special studies of the structure and rotation of our own part of the universe, the Milky Way. Made by Warner and Swasey, it is really four-barrelled with two main tubes each 15 feet long and 20 inches in diameter, a 10-inch guiding telescope, and a 3½-inch finder.

Science News Letter, September 2, 1939

ANTHROPOLOGY

Japanese in Hawaii Differ Strangely in Type

JAPANESE immigrants in Hawaii and their descendants are physically different from Japanese back home.

So marked are the differences, measured and observed by Dr. H. L. Shapiro, anthropologist, of the American Museum of Natural History, that he has an adjective for it—"astounding."

It has been generally assumed that human groups change slowly in type. But here is nature working with dynamic speed. Prof. Franz Boas of Columbia University opened the eyes of scientists to this phenomenon, when he measured children of immigrants in America a few years ago, and showed how they differed from their Old World ancestors. Now, Dr. Shapiro has taken a single current in the waves of human migration, to find out what happens when a group transplants itself on strange new soil.

Japanese immigrant men in Hawaii—almost all of these have come to Hawaii since 1898—are no taller, but they have longer legs and shorter bodies than men living in villages of Japan from which they migrated. Japanese in Hawaii have broader shoulders. They weigh more. The face is longer, jaw wider, relatively, the nose narrower. Hair is less coarse. Women show fewer changes, but, unlike the men, are taller by a full inch.

"In 18 out of 35 traits the immigrants diverged distinctly," is the way Dr. Shapiro contrasts transplanted Japanese with stay-at-homes. Children of these immigrants, born in Hawaii, show additional changes in size.

To set down and analyze these changes, the anthropologist has devoted nearly 400 pages in his newest volume, "Migration and Environment."

But one question, he admits, remains unanswered. Why—why should human beings change so distinctly in a new setting? He suspects that the immigrants may themselves have been a selective group, though their economic and social background offers no clue to this. He also concludes that environment has further modified these people. But how environmental factors can change man substantially within a single generation—that is a new scientific problem, for the future to solve.

Science News Letter, September 2, 1939

MEDICINE

Nicotinic Acid Used To Treat X-Ray Sickness

ONE of the marvels of modern medicine is the way new chemicals are pushed into service against ills to which they seem quite unrelated.

There is nicotinic acid, not to be confused with poisonous nicotine in tobacco. It is a specific for pellagra, nutrition ill of poverty and ignorance—fat pork, molasses and hominy grits diets. Good diet is the pellagra preventive and permanent cure but nicotinic acid is the speedy emergency remedy. Now it comes to the aid of sufferers from cancer who face more distress caused by X-ray therapy, producing such nausea and vomiting that some prefer to stop treatment than suffer this additional discomfort. Dr. J. Wallace Graham of Toronto (*Journal, American Medical Association*, Aug. 19) found about three out of four patients suffering radiation sickness were aided by nicotinic acid fed daily, one of them markedly and the other two with good results.

Science News Letter, September 2, 1939

PUBLIC HEALTH

European Sleeping Sickness Reduced in Frequency

EUROPEAN sleeping sickness, a "new" disease that has appeared during post-war years, may be growing weaker, or mankind may be growing stronger against it.

These alternative hypotheses for its declining incidence are offered by the Matheson Commission which has been investigating the disease, under the chairmanship of Dean Willard C. Rappleye of the Columbia University school of medicine.

Epidemic encephalitis, as the disease is technically known, has been attacked with various medical weapons. Newest is benzedrine sulphate, the so-called "pep pills" of exam-cramming students. It is given either alone or in combination with atropine. The combination treatment is said to yield best results. However, a real cure seems still as remote as it did ten years ago.

Science News Letter, September 2, 1939

PUBLIC HEALTH

Upper Air Over Atlantic Will be Searched for Pollens

HAY-FEVER pollens will be sought for in the airplanes above the North Atlantic, by pilots of Pan American Airways. They will be collecting the irritating grains (if any) on sticky glass slides for O. C. Durham, chief botanist of the Abbott Laboratories in North Chicago, Ill. Nobody has ever known how far out to sea, or how high, the clouds of America's ragweed pollens are blown; this cooperative study is the first effort to find out.

In the meantime, Mr. Durham himself is making a 10,000-mile aerial pollen survey over the land, flying in planes of United and Pennsylvania Central Air Lines. The sticky glass collecting slides he uses are held in a stream-lined version of the "skyhook," invented some years ago by Col. Charles A. Lindbergh.

Ordinarily, pollen grains and other trouble-making particles are left far below, at present-day air cruising levels. However, the summer of 1939 is proving to be a season of most unusual pollen abundance, as Mr. Durham predicted last spring it would be, so that it is of considerable medical and botanical interest to know whether the heavier pollen concentration near the ground has any reflection in the upper air.

Science News Letter, September 2, 1939

ASTRONOMY

Another Bright Planet

This Month Jupiter, Nearer Than It Will Be Again For Twelve Years, Takes Place of Mars as Brightest in Sky

By JAMES STOKLEY

CLOSER to the earth this month than it will be again for a dozen years to come, the planet Jupiter is now most brilliant of the stars and planets seen in the night-time sky. Shining in the southeast September evening skies, it is of magnitude minus 2.5 in the astronomer's scale to brightness. This makes it very easy to locate. However, it is indicated on the accompanying maps. In these is shown the appearance of the heavens at 10:00 p. m., standard time, on the first, 9:00 p. m. on the 15th and 8:00 p. m. on the 30th.

Jupiter is nearly three times as bright as Mars, low in the south, in the group of Sagittarius, the archer. A third planet, Saturn, is visible to the left of Jupiter. Though the faintest of the trio, it is still more brilliant than any star now seen, with the exception of Vega, in Lyra, the lyre, high in the west.

Vega is of the astronomer's first magnitude in brilliance, and five other stars of this class are shown on the maps. Nearly overhead is Deneb, in Cygnus, the swan. This figure is probably better recognizable as a cross, and is often called "the northern cross." Deneb marks the top, the northern end. In Aquila, the eagle, we find another bright one. This, south of the southern end of the cross, is Altair, and its recognition is simplified because of the two fainter stars, one above, the other below, that attend it.

Three Near Horizon

The remaining three first magnitude stars are all near the horizon. Low in the northwest we see Arcturus, in Boötes, which, in another month, will set soon after the sun, and be invisible. Another is in the southeast—Fomalhaut, in Piscis Austrinus, the southern fish. This star is now nearly at its greatest height, and it can never be seen much better from these northern latitudes. The third, however, is low now, but will be higher in the evenings a few months hence. Capella is its name, in Auriga, the charioteer, just above the northeastern skyline.

No planets are seen well this month in the morning sky, though Mercury may be glimpsed low in the east at dawn for

the first day or so. After that it draws too nearly into line with the sun to be observed. For the same reason, Venus is not now on view, for it, too, is now in the sun's direction, beyond it.

An important astronomical event occurs on September 23, at 5:50 p. m., E. S. T. Then the sun, journeying southward in the sky, crosses the equator. This is the autumnal equinox, the beginning of autumn.

The second half of this year is proving to be a good one for seeing planets. In July, Mars was at a distance of some 36,000,000 miles, closer than it will be for some years. And now Jupiter, at a mere 367,000,000 miles, is nearer than it will be until 1951. The earth and Jupiter both revolve around the sun, the former at a distance of 93,000,000 miles, the latter at 483,000,000, on the average.

Not in Same Period

Since the two do not go around in the same period the two bodies are sometimes in the same and sometimes in opposite directions from the sun. Thus, in the former event the distance between Jupiter and the earth is the difference between the distances of the two from the sun, or some 390,000,000 miles.

All this would be exactly true if the orbits of earth and Jupiter were perfect circles. As they are not, the two can come even closer than this would indicate. Both move in ellipses.

The earth, for instance, is 3,000,000

miles nearer the sun in January than in July. Jupiter is sometimes about 47,000,000 miles nearer the sun than at others. This means that if Jupiter and the earth are in the same direction from the sun, and at the same time the former is farthest from the sun, the planets are more than 413,000,000 miles apart.

But now, however, the opposite conditions prevail, for Jupiter is almost at its nearest to the sun. This brings it also closest to us, 367,000,000 miles. And this proximity, both to us and to the sun, from which its illumination comes, makes it much more brilliant than usual.

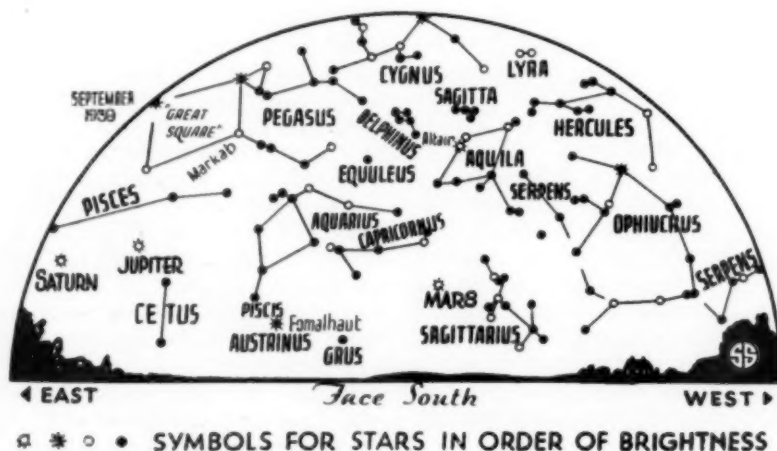
It was for a reason exactly similar that Mars was so close, and so bright, during July and August.

Telescopes Turned

The near approach of Mars made it the object of careful astronomical study, and now many telescopes are turned on Jupiter. The planet's diameter is 88,640 miles, about ten times that of the earth.

Telescopes show frequent changes in its appearance, which could hardly occur if we were looking at some solid surface. Instead, it is believed, the visible part of Jupiter is the top of a thick layer of clouds which perpetually surround it. These clouds, however, are not the kind we have on the earth, but are of solid particles of methane and ammonia, substances which are gases, and highly poisonous ones, on earth.

Underneath these clouds of frozen gases there may be a deep ocean of ice, and at the center a rocky core, though if this is the case, it is difficult to explain the great changes that occur in the





clouds. The most usual appearance these present is of a series of belts, varying in width and number. But often other spots develop, sometimes with great rapidity, which suggests some sort of activity underneath.

So we must admit that Jupiter still is a great problem, one of the many to challenge the astronomers of today and of tomorrow.

Celestial Time Table for September

Friday, Sept. 1, 11:14 a. m., Moon passes Jupiter. Sunday, Sept. 3, 6:00 a. m., Mercury nearest sun; 9:23 a. m., Moon passes Saturn. Tuesday, Sept. 5, 3:00 p. m., Venus

in line with sun. Wednesday, Sept. 6, 3:24 p. m., Moon at last quarter. Tuesday, Sept. 12, 1:00 p. m., Moon nearest earth—222,500 miles. Wednesday, Sept. 13, 6:22 a. m., New moon. Sunday, Sept. 17, 1:00 p. m., Mars nearest sun. Wednesday, Sept. 20, 5:34 a. m., Moon in first quarter. Friday, Sept. 22, 9:00 a. m., Mercury in line with sun. Saturday, Sept. 23, 3:05 a. m., Moon passes Mars; 5:50 p. m., Autumn commences. Monday, Sept. 25, 4:00 a. m., Moon farthest—252,200 miles. Wednesday, Sept. 27, 2:00 p. m., Jupiter nearest—367,000,000 miles. Thursday, Sept. 28, 9:27 a. m., Full moon; 10:53 a. m., Moon passes Jupiter. Saturday, Sept. 30, 12:19 p. m., Moon passes Saturn.

Eastern Standard Time throughout.

Science News Letter, September 2, 1939

ANTHROPOLOGY

Anthropologist Sees Russians Becoming One Physical Type

Dr. Hrdlicka, Back from Russia, Calls Neandertal Child Important Link in Prehistory; Describes Stone Age Venus

BACK HOME from studying "Man" ancient and modern in the Soviet Union, Dr. Ales Hrdlicka of the Smithsonian Institution finds that Russians today are becoming one physical type, marked by sturdiness.

"It is almost as if they were all made in the same mold," declared the anthropologist, interviewed on his arrival in Washington, D. C. "I am told that there is already an increase in stature. Thousands of them exercise in broad streets of Moscow and other cities, and the children are kept out of doors in parks and woods. I saw few malformed people, and only one child with the crooked legs that are a sign of rickets."

A likeness of present day Russians in stockiness and vigor is emphasized, the anthropologist noted, by the abbreviated

clothing worn. Even exotic types, minus old-style long beards, have become indistinguishable in the crowds.

An effort to have Soviet scientific discoveries made known more fully to scientists of other countries was initiated by Dr. Hrdlicka, and he was assured that means of doing this would be attempted. Young Soviet scientists—most of the elders have died off—are conducting so many expeditions that Dr. Hrdlicka fears his memory of the number would sound like gross exaggeration. In no other country can an anthropologist—with an eye out for museums—find so many. Yet, scientific reports rarely are translated from Russian for foreign use.

A small ivory Venus carved by an Old Stone Age craftsman more than 10,000 years ago, recently unearthed in Siberia,

was examined by Dr. Hrdlicka and is pronounced most unusual in having an attractive braided hair dress, and "nothing ugly about it." Stone Age Venuses to which scientists are accustomed, from previous finds, are generally over-fat images that speak badly for the aesthetic sense of the Old Stone Age. The images, including the Siberian find, are usually believed to be fertility charms.

Great importance for understanding human history is ascribed by Dr. Hrdlicka to the discovery last year of a child's skull in Siberia. The crushed object, which Dr. Hrdlicka found meticulously restored by expert care, is the remnant of a Neandertal child, of the physical type that inhabited many parts of the earth some 60,000 years ago and that may have had a long career of development before that.

"This child's skull," declares the anthropologist, "bridges the gap between the prehistoric East and West."

The skull, he explained, differs from the head of a modern child in having beetling eyebrow ridges, large teeth and receding lower jaw. These were typical facial traits of the Neandertal era. Yet, the foreshadowing of modern man is detected in the Neandertal child by the anthropologist.

"Everything we know now points to man changing from this type into the modern type," he concludes. "The steps can even be seen. Finding this typical Neandertal child in Siberia, between Europe and the Far East, makes it seem very likely that Peking Man is a variant of that same human family, which lasted for a very long time. There is no good reason to doubt that modern man is descended from that phase."

Despite an injury on shipboard while en route to Europe, Dr. Hrdlicka was able to spend two busy months in the Soviet country, even taking active part in archaeological excavations at four sites.

A skull of a Siberian of the New Stone Age, presented to Dr. Hrdlicka for the Smithsonian's collection, is being shipped via diplomatic mail pouches for greater safety. It will serve as evidence for the scientific view of the Siberian origin of America's Indians. Placed among Algonkian Indian skulls, this Siberian type would be indistinguishable, even to experts, the anthropologist said.

Science News Letter, September 2, 1939

Chemists are seeking industrial uses for pecan shells.

Salmon and trout have pink or orange colored flesh because of coloring matter in the oil.

ARCHAEOLOGY

News of Prehistoric America Reported to Mexico Meeting

Scientists Hear of Discovery of Temple Buried for Hundred of Years Beneath Another at Chichen Itza

NEWs of prehistoric America — its buildings concealed beneath buildings; its fortune-telling mothers; its first, all-but-wild corn crops—latest scientific discoveries on these and several hundred more angles of ancient Americans are being reported in a barrage of papers read or declaimed before the International Congress of Americanists meeting in Mexico City.

Discovery of a temple which has been concealed for hundreds of years beneath the famous lofty Mayan temple "El Castillo" at Chichen Itza was reported by José A. Erosa Peniche. The stairway, facade and chambers of this ancient building, which Mayan Indian architects covered over to raise a higher, more impressive temple on the lofty pyramid base, were found by tunneling beneath the present structure, to avoid damaging it. Other archaeologists told of probing other Indian monumental buildings in similar fashion, as Mexico burrows deeper beneath the visible present.

Mayan Indians, greatest scholars of ancient America, knew exactly when to introduce inter-calendar days necessary to keep their year in step with the sun. So Erwin P. Dieselforff of Copan, Guatemala, has concluded. Eclipses of the sun were of major interest to these ancient American astronomers, he declared, explaining the Mayan method of forecasting when eclipses would occur.

Mayan Indian mothers consulted astrologers in their anxiety to know what good fortune or bad might be the destiny of their babies. Four of the lists of days and their omens, found in the books of Chilam Balam, have been studied by Alfredo Barrera Vázquez of the National Museum, in Mexico City, and he has concluded that the custom of guarding babies' fortunes by giving them calendar names up to a certain age was used by Mayan mothers of Yucatan, as well as by those in Indian nations of Mexico proper.

Tackling the much-argued question of when the first corn was raised by the first New World farmers, Pablo Martínez del Río advanced the theory that agriculture may have had a more rapid rise

in America than in the Old World. Differences in methods of seed selection and cultivation, he believes, speeded up results for Indian farmers, so that it is not necessary to conclude, as some botanists have, that American Indians must have started on their road to higher civilization an extraordinarily long time back.

Newest excavations at Monte Alban, Mexico, scene of the discovery of a Treasure Tomb a few years ago, have demonstrated who built the mountain-top city. Indians of the same cultural heritage built both Monte Alban and the remarkable valley city of Milta not far away. Architectural ideas are the same in both cities, Dr. Alfonso Caso, director of Monte Alban excavations, has concluded. Three stages of Monte Alban's ancient history have been traced, and can be linked in time with Mexico's cultural stages of the Archaic, older than the Christian era, then Teotihuacan or Toltec, and Aztec.

The effort to find out what was going on in different parts of Middle America, during its great Indian era, have led archaeologists to explore pit tombs near Guatemala City. Dr. A. V. Kidder of the Carnegie Institution of Washington reported finding that these tomb-builders were living while Monte Alban in southern Mexico was in its middle stage, and the great Toltec Indian civilization in central Mexico was nearing its decline. Pottery from the Guatemalan tombs provides the key for linking the tomb builders with other tropical American cultures and drawing Central America more closely into the picture.

Success in finding one of the missing stone statues from Tiahuanaco, Bolivia, which a French traveler carried off to Europe a century ago, was reported by Henri Lehmann. Modern scientists have never seen these statues, he said, until now one of them, a statue combining human and animal features, has been found and placed at the Gate of the Sun in Tiahuanaco.

Science News Letter, September 2, 1939

A man can stand hot sun that will kill a desert diamond-back rattlesnake.



Roots by the Ton

WHEN a mowing-machine, or a big flock of hungry sheep, has finished with a field we say, "The grass is all gone."

That is a serious over-statement. A highly important half of the grass remains—the close-knit webwork of roots and underground stems. These still hold the soil against erosion, and will send up another crop of stems and leaves to make next season's pasture or hay.

Quantitative studies of this important but usually overlooked half of the grass have been going on for many years at the University of Nebraska, out on the prairies where Grass means Life. A new and comprehensive grassroots survey, extending from western Iowa across Nebraska and Kansas into the plains of eastern Colorado, has recently been completed by Drs. S. B. Shively and J. E. Weaver, for the Conservation and Survey Division.

These two botanists and their associates sought out still-unbroken stretches of native prairie of many different types, ranging from the tall, rank big bluestem to the curling, ground-hugging buffalo grass. They removed hundreds of sample sods, each half a square meter in area and ten centimeters (four inches) deep. They carefully washed out the soil, carefully determined volume and weight of the mass of roots and underground stems or rhizomes.

Results of this grassroots botanizing are astonishing. The root and rhizome crop of typical grasslands in West and Midwest can be measured in tons per acre. Total lengths add up into miles per square foot of sod.

Yields vary with rainfall, just as top yields vary. Thus, a series of 27 samples of big bluestem sod averaged out at 4.54

dry-weight tons per acre for the western Iowa area, 3.54 tons per acre in the country around Lincoln, Neb., and 3.17 in the drier region southwest of Lincoln. This falling curve closely follows the falling curve of annual precipitation for the same areas.

Organic matter in the soil—the stuff that comes from decaying plants and

gives life and energy to the soil—also decreased uniformly with less rainfall. In western Iowa it constitutes 7 per cent by weight of the surface four inches of soil. In eastern Nebraska there is only 6 per cent. This falls to 4.5 per cent in central Kansas and finally to about 2.5 per cent in Colorado.

Science News Letter, September 2, 1939

MEDICINE

New Anti-Pneumonia Drug Can Damage White Blood Cells

Find Trouble in Three Children Who Were Treated With Sulfapyridine; Sulfanilamide Also Has Effect

WARNING that the drug sulfapyridine, used successfully in treating pneumonia, can damage dangerously the white blood cells is contained in a report by Drs. Nathan Rosenthal and Peter Vogel of New York City. (*Journal American Medical Association*, Aug. 12)

They found granulocytopenia in three children treated with the drug. Sulfanilamide also causes the trouble, and cases caused by sulfapyridine have previously been reported in adults. Careful tests of blood for possible danger signs are advised when the drug is being used.

Science News Letter, September 2, 1939

Feeds on Human Ear Drum

A UNIQUE case of a Japanese beetle feeding on the ear drum of a man is reported by Dr. Max Kimbrig of Huntington, N. Y. The legs or biting equipment of the beetle were stuck fast in the ear drum when Dr. Kimbrig removed it, and a large part of the drum was perforated.

"Since the Japanese beetle is herbivorous, it is difficult to understand his appetite for human ear drums," Dr. Kimbrig reports. "I have been unable to find in the literature any report of the destruction of an ear drum by a beetle that lives on plants."

Science News Letter, September 2, 1939

New Light on Cancer

THE RECENT report of two Dutch scientists, Drs. Fritz Kogl and Hanni Erxleben, that they had found unnatural forms of amino acids in malignant tissues, is given notice in the *Journal*, an editorial stating that, if confirmed by other workers and if all types of cancer

tissues contain them, "a new and fertile field for study into the nature of cancer will be opened."

Science News Letter, September 2, 1939

Vitamin F Declared Dead

DECLARING that vitamin F has not been established as a vitamin although it has been commercialized by firms marketing cosmetics, an A.M.A. committee has endorsed the elimination of the term by the American Society of Biological Chemists and the American Institute of Nutrition. Reduction of the number of vitamin A and D preparations is recommended. Even since the committee on vitamins made its most recent report, the *Journal* observes that "vitamin B₆ has been synthesized, the chemistry of vitamin K has been clarified to a considerable extent, and evidence has accumulated about the significance of these factors and of riboflavin in nutrition."

Science News Letter, September 2, 1939

SOCIOLOGY

Labor Laws Make School's Job Bigger

LABOR laws raising the age at which children can enter industry has had one effect which many people may not have heard about. One result of these laws, Miss Katharine F. Lenroot, chief of the U. S. Children's Bureau, has pointed out, is to increase the number of children in schools by many thousands.

In some localities this has made the matter of space an acute problem. The principal problem, according to Miss Lenroot, is that of meeting the needs of adolescent boys and girls.

RADIO

Dr. H. E. Howe, editor of *Industrial and Engineering Chemistry*, will be the guest scientist on "Adventures in Science" with Watson Davis, director of Science Service, over the coast to coast network of the Columbia Broadcasting System, Monday, September 11, 4:30 p.m., EDST, 3:30 EST, 2:30 CST, 1:30 MST, 12:30 PST. Listen in on your local station. Listen in each Monday.

"The very fact that in the past many boys and girls were inclined to leave school at the age of 14 may indicate that some particular need of the child is not being met by the school," Miss Lenroot said. "At no time in life, perhaps, do restlessness and the spirit of adventure become such definite factors in the child's life. Practically all juvenile delinquents are children of school age."

Miss Lenroot does not, of course, hold the school entirely responsible for juvenile delinquency. Home environment and the attitude of the parents play a large part. But it is usually during his school days that the child's most serious delinquency develops and the school is therefore most intimately involved.

Schools are meeting the problem first, by giving more attention to the person being taught than to the things he is being taught; second, by giving vocational training and guidance; third, by establishing child guidance centers or other services for getting at the underlying cause of a child's dissatisfaction with school and remedying it.

"When the school program is enriched and vitalized so that the needs of all children are met, school becomes an exciting experience," Miss Lenroot said. "When teachers can and do know the kind of children with whom they work, they can make a great contribution to preventing delinquency and to promoting the welfare of all children."

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SCIENCE NEWS LETTER

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ANTHROPOLOGY—PHYSICS

"Melanoid" Skin Pigment Discovered by New Instrument

**Diffuse Form of Melanin, Characteristic of Dark Men,
But New Pigment Is in Skins of Even Pale Blonds**

"**M**ELANOID," a hitherto unknown kind of coloring matter, has been discovered in skins of all peoples, from pale blonds to Negroes, through the use of a new optical instrument, the recording spectrophotometer. This discovery, made in the course of researches by Dr. Edward A. Edwards of the Harvard Medical School and Dr. S. Quimby Duntley of the Massachusetts Institute of Technology, raises the number of known skin pigments to five.

The researches of Drs. Edwards and Duntley constitute the first precise study ever made of the complex factors underlying variations in the color of human skin. The investigation, which may have significant bearing on a host of important and puzzling medical problems, is in progress at the Massachusetts Institute of Technology. (*American Journal of Anatomy*)

Already the results are enabling doctors to diagnose anemia far more effectively than has been heretofore possible and to watch minutely the progress of attempts to stem its wasting tide.

Diagnostic Tool

The experiments may also afford medicine a valuable diagnostic tool and method of observing treatment in circulatory disorders and various vascular and skin diseases, and may also contribute to studies of disturbances of the endocrine, or ductless, glands which produce those all-important chemical messengers of the body, the hormones. Disorders of these glands underlie a wide variety of far-reaching bodily ills.

Key instrument in the research is the recording spectrophotometer developed at the Institute by Prof. Arthur C. Hardy. With its aid the two investigators have been able to make speedy and precise analyses of skin colors which are as objective as the temperature readings of a thermometer. Thus not only does it improve on previous methods, which have relied largely on the erratic human eye, but it also automatically analyzes the color of the skin by examining its capacity to reflect light at each separate wave-length, a task impossible for the human eye.

Melanoid is a diffuse form of melanin, long known as a skin pigment. Melanin is characteristic of brunets, and dominates the complexions of Negroes and other black races.

Carotene, Too

A third pigment, carotene, which is responsible for the hue of carrots, has never previously been recognized as a color component of the human skin.

The other two pigments involved in skin color, and the most important in producing its pinkish flesh tint, are the two forms of hemoglobin found in the blood, oxy-hemoglobin, and reduced or oxygen-free hemoglobin.

The turbidity of the deeper layers of the skin furnishes an added effect of light-scattering, which adds a bluish component to the general skin color. Without this scattering, a phenomenon probably best known for giving the sky its blue, the normal skin would be like cellophane-wrapped, raw beefsteak.

All peoples, the two scientists have found, have these five color pigments. Variations in skin color, from Nordic to Negro, are due entirely to the proportions in which they are blended. Melanin and melanoid are particularly important, for their abundance results in a dark skin and a lack of them gives a light skin. The bodily distribution of these pigments is identical for all races but the amount is purely a matter of constitutional and racial factors. White men have the least melanin, they found, and it steadily increases in the Japanese, Hindu, Mulatto and Negro, in that order.

Tanning Studied

Although they were concerned primarily with pigments normally present in the skin, Drs. Edwards and Duntley also studied the secondary or acquired type of melanin-production by the body, the familiar process known as tanning. Skin-darkening in this manner, they found, depends on the ease with which light penetrates the skin and the inherent ability of the individual to form melanin in response to this stimulus.

Skins of members of the dark races already have so much melanin that an exceptional amount of light is needed for tanning, but very blond whites, who have but little melanin, allow easy light penetration. These blond whites, however, cannot form appreciable amounts of the pigment and thus cannot take advantage of the natural protective mechanism of tanning. Thus they sunburn easily—and usually painfully. Brunet whites are midway between the dark races and very blond whites, and they normally tan.

A wide fluctuation in the amount of carotene in various individuals was also noted by the two scientists, probably a result of variations in diet. Increased amounts of this yellow pigment, they believe, together with smaller amounts of melanin and melanoid, is very likely the reason that women usually have lighter skins than men.

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Ticks are not insects; they are arachnids, a group closely related to spiders and differing from insects notably in the lack of antennae and in having eight legs usually instead of six.

The American, or Northern Bald, Eagle regularly nests in a tree or on a rocky crag, but a nest on the ground, which had contained two eaglets, was recently found and photographed in Michigan.

Additional Reviews
On Page 160

•First Glances at New Books

Public Health

GUIDING PRINCIPLES FOR STUDIES ON THE NUTRITION OF POPULATIONS—E. J. Bigwood—*Columbia Univ. Press*, 281 p., \$1.50. (League of Nations, Health Organisation) One of the great and permanent benefits from the League of Nations is its attack upon the hunger, unmistakable and hidden, that afflicts the world. In a time when butter is sacrificed to bullets, when food surpluses worry some parts of the world while near famine stalks other areas a few hours away by airplane, fundamental, scientific knowledge is necessary for use when and if anything can be done about the situation. This volume follows up the more sensational findings of the League's commission on nutrition, telling how to assay the state of nutrition from various standpoints.

Science News Letter, September 2, 1939

Sociology

MIGRATION AND ENVIRONMENT—H. L. Shapiro—*Oxford*, 594 p., \$7.50. See page 153.

Science News Letter, September 2, 1939

Astronomy

THE SUNSPOT PERIOD—H. Helm Glayton—*Gov't Print. Off.*, 18 p., 10c. (Smithsonian Miscellaneous Collections, vol. 98, no. 2) Analysis of sunspot cycles in terms of departures from normal pressure over the earth's surface and forecasts of the dates of maxima and minima of sunspots and the intensities of the maxima.

Science News Letter, September 2, 1939

Chemistry

TRANSACTIONS OF THE INSTITUTION OF CHEMICAL ENGINEERS, Vol. 16, 1938—*Institution of Chemical Engineers, London*—250 p., 21s.

Science News Letter, September 2, 1939

Chemistry

INTRODUCTION TO ORGANIC CHEMISTRY—Hippolyte Gruener and Herman P. Lankelma—*American Book Co.*, 533 p., \$3. Organic chemistry as taught at Western Reserve for students of a liberal arts college.

Science News Letter, September 2, 1939

Chemistry

INDUSTRIAL SOLVENTS—Ibert Mellan—*Reinhold*, 480 p., \$11. A mere quarter of a century ago very few solvents were used by industry. Now there are over a hundred major chemical solvents, 1,600,000,000 pounds annually. Hydrocarbons, alcohols, aldehydes, acids, ketones, ethers, esters are used in varnishes,

paints, insecticides, for dry cleaning clothes, as plasticizer, in rubber industries, in making liquids wetter and more penetrating, etc. With faster drying paints, varnishes and lacquers, made possible by new solvents, "the familiar sign 'Fresh Paint' will soon be relegated to the past like the wooden Indian of cigar stores." Forecast: It is entirely possible that some unknown or unheralded solvent may some day bring about far-reaching changes in the industries.

Science News Letter, September 2, 1939

Physiology

SLEEP AND WAKEFULNESS—Nathaniel Kleitman—*Univ. of Chicago Press*, 638 p., \$5. Studies of normal and abnormal sleep, ending with the author's own "evolutionary theory of sleep and wakefulness" which, as he suggests, does not settle the problem of sleep but gives scientists another problem to solve. Too technical for lay reading.

Science News Letter, September 2, 1939

Medicine

MALARIA IN PANAMA—James Stevens Simmons, George R. Callender, D. P. Curry, Seymour C. Schwartz and Raymond Randall—*Johns Hopkins Press*, 326 p., \$1.10. Specialists in public health and tropical diseases will welcome this discussion of malaria, past and present, in Panama.

Science News Letter, September 2, 1939

Bacteriology

MAN AGAINST MICROBE—Joseph W. Bigger—*Macmillan*, 304 p., \$2.50. This non-technical and authoritative book was written for the layman by the professor of bacteriology and preventive medicine at Trinity College, University of Dublin. While clear enough to the thoughtful reader, and reflecting the author's enthusiasm for his chosen field, the book may disappoint American readers accustomed to a more exciting and dramatic style in popular books on science.

Science News Letter, September 2, 1939

Anthropology

CULTURAL RELATIONS ON THE KANSU-TIBETAN BORDER—Robert B. Ekvall—*Univ. of Chicago Press*, 87 p., \$1.50. Chinese, Moslems, and Tibetans are the outstanding groups inhabiting this little-known borderland of China and Tibet. The writer, who was born there and has spent much of his boyhood working among the people, analyzes the part played by different groups in the life of the region.

Science News Letter, September 2, 1939

Geography

I KNOW AN ISLAND—R. M. Lockley—*Appleton-Century*, 300 p., \$3. The Orkneys, the Faroes, the Blaskets, and many others that fringe the larger islands and peninsulas of northwestern Europe, where seabirds find haven and where men of the Celtic race find life hard but free, described and pictured by one who loves the islands and the seas that surge around them.

Science News Letter, September 2, 1939

Photography

AMERICAN CINEMATOGRAPHER HAND BOOK AND REFERENCE GUIDE (3d. ed.)—Jackson J. Rose, comp.—*American Society of Cinematographers*, 218 p., \$3. A reference book of convenient pocket size for the professional or advanced amateur.

Science News Letter, September 2, 1939

Biography

AMERICAN WOMEN, Vol. III, 1939-40—Durward Howes, ed.—*American Publications*, 1083 p., \$10. A biographical listing of 10,222 notable American women, including more than 1,200 scientists and teachers of the sciences and one Nobel prize winner.

Science News Letter, September 2, 1939

Library Science

BASIC REFERENCE BOOKS, 2nd. ed.—Louis Shores—*American Library Association*, 472 p., \$4.25. "An introduction to the evaluation, study, and use of reference materials with special emphasis on some 300 titles", by the director of library school and instructor in reference at the George Peabody College for Teachers. A 31-page bibliography selects important books for a "Core Collection".

Science News Letter, September 2, 1939

Medicine

TUBERCULOSIS AND SOCIAL CONDITIONS IN ENGLAND, With Special Reference to Young Adults—P. D'Arcy Hart and G. Payling Wright—*National Association for the Prevention of Tuberculosis, London*, 165 p., 3s.

Science News Letter, September 2, 1939

Geography

METROPOLIS, A Study of New York—Mary Field Parton—*Longmans, Green*, 191 p., \$2. A guidebook in a new and informal manner, written for boys and girls. It tells how to get to New York's interesting places and what to do and observe when you get there. An unusual feature is the emphasis on factories that may be toured.

Science News Letter, September 2, 1939

First Glances at New Books

Additional Reviews

On Page 159

Public Health

MAN AND HIS HEALTH—*American Museum of Health, Inc.*—96 p., 50c. The Hall of Man at the N. Y. World's Fair attracts one of the largest crowds visiting the World of Tomorrow. This is a handbook to the excellent array of exhibits there. But is more than that, being a preview of the American Museum of Health that will come into existence after the Fair as a permanent exhibition devoted to medicine and health.

Science News Letter, September 2, 1939

Psychology

HEREDITARY AND ENVIRONMENTAL FACTORS IN THE CAUSATION OF MANIC-DEPRESSIVE PSYCHOSES AND DEMENTIA PRAECOX—Horatio M. Pollock, Benjamin Malzberg and Raymond G. Fuller—*State Hospitals Press*, 473 p., \$2.50. See SNL, May 20.

Science News Letter, September 2, 1939

Biology—Medicine

MEDICAL MICROBIOLOGY—Kenneth L. Burdon—*Macmillan*, 764 p., \$4.50. For medical students and students of bacteriology who may be planning to enter the fields of either medicine or public health.

Science News Letter, September 2, 1939

Entomology

THE SATYRIDAE—Cyril F. Dos Passos—*Cheyenne Mountain Museum*, 13 p., 50c. Second part of the treatment of an important family of butterflies.

Science News Letter, September 2, 1939

Biography

A DOCTOR FOR THE PEOPLE—Michael A. Shadid—*Vanguard*, 277 p., \$2.50.

Science News Letter, September 2, 1939

Medicine

THE ENDOCRINE GLANDS—Max A. Goldzieher—*Appleton-Century*, 916 p., \$10. A book written by an endocrinologist for practicing physicians who wish to keep abreast of present knowledge in this field but lack the time to follow the enormous volume of special literature on the subject.

Science News Letter, September 2, 1939

Economics

OVERSEAS TRADE AND EXPORT PRACTICE—G. T. MacEwan—*Chemical Pub. Co.*, 366 p., \$5. This book presents specialized and technical knowledge concerned with Great Britain's essential task of selling to other lands the goods and services with which to pay for the

foodstuffs and raw materials that must be bought abroad. It is by the vice-chairman of the Institute of Export in London.

Science News Letter, September 2, 1939

Anthropology

DATING PREHISTORIC RUINS BY TREE-RINGS—W. S. Stallings, Jr.—*Laboratory of Anthropology, Santa Fé*, 20 p., 50c. For those who want to know exactly how a tree-ring calendar can be used to date Indian settlements, Mr. Stallings has prepared this plainly worded account. It contains enough technical detail to satisfy almost any reader, except one who wishes to become a dendrochronologist, and that requires laboratory training.

Science News Letter, September 2, 1939

Psychic Research

EXPERIMENTS IN PSYCHICS—F. W. Warrick—*Dutton*, 399 p., \$7.50. The author has convinced himself with these experiments and other study that "trickery alone is not the solution of the baffling problem of psychic photography."

Science News Letter, September 2, 1939

Child Study

THE PHYSICAL AND MENTAL GROWTH OF GIRLS AND BOYS AGE SIX TO NINETEEN IN RELATION TO AGE AT MAXIMUM GROWTH—Frank K. Shuttleworth—*National Research Council*, 291 p., \$2. (Monographs of the Society for Research in Child Development, Vol. IV, No. 3, Serial No. 22.)

Science News Letter, September 2, 1939

Sociology

SOCIOLOGY OF CHILDHOOD—Francis J. Brown—*Prentice-Hall*, 498 p., \$2.25. Most sociologists write of adults but here is a textbook from New York University dealing with the problems relating to normal children.

Science News Letter, September 2, 1939

Philosophy

THIS BUSINESS OF LIVING—L. W. Grensted—*Macmillan*, 187 p., \$1.75. A book of the inspirational type by the Nolloth professor of the philosophy of the Christian religion in the University of Oxford.

Science News Letter, September 2, 1939

Psychology

GENERAL PSYCHOLOGY—J. P. Guilford—*Van Nostrand*, 630 p., \$3. An introductory textbook which avoids controversial issues and theories. The author is professor of psychology at the University of Nebraska.

Science News Letter, September 2, 1939

Medicine

ONE HUNDRED THOUSAND DAYS OF ILLNESS—Dorothy Ketcham—*Edwards*, 477 p., \$2. The director of social services at the University of Michigan Hospital and her staff present an account and appraisal of 16 years experience in learning and meeting the needs of child patients in hospitals. The book should be extremely useful to social service workers and others concerned with the care of hospital patients.

Science News Letter, September 2, 1939

Mathematics

ANALYTIC GEOMETRY—Roscoe Woods—*Macmillan*, 294 p., \$2.25. A textbook for use in college and technical schools, prepared by the associate professor of mathematics at the University of Iowa.

Science News Letter, September 2, 1939

Chemistry

AN INTRODUCTION TO CRYSTAL CHEMISTRY—R. C. Evans—*Cambridge (Macmillan)*, 388 p., \$4.50. The discovery of the diffraction of X-rays by the atomic gratings formed in crystals, has now produced a sufficiently large amount of knowledge to make feasible a compilation of the chemical and physical properties which can be obtained by this method. Dr. Evans of the University of Cambridge brings this knowledge together in a valuable book.

Science News Letter, September 2, 1939

Public Health

COMMUNITY HEALTH ORGANIZATION, A Manual of Administration and Procedure Primarily for Urban Areas (3rd ed.)—Ira V. Hiscock, ed.—*Commonwealth Fund*, 318 p., \$2.50.

Science News Letter, September 2, 1939

Bacteriology

THE BIOLOGY OF BACTERIA: An Introduction to General Microbiology (2d ed.)—Arthur T. Henrici—*Heath*, 494 p., \$3.60.

Science News Letter, September 2, 1939

Technology

INDIA RUBBER MAN; The Story of Charles Goodyear—Ralph F. Wolf—*Caxton*, 291 p., \$3. The tale of the man who founded the modern rubber industry with the discovery of vulcanization. The volume is claimed to be the first biography although 79 years has passed since Goodyear's death and a century since his epochal discovery. The ups and downs of Goodyear and his fights for recognition make fascinating reading.

Science News Letter, September 2, 1939